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**From:** Trumble, Luke (EGLE) [TrumbleL@michigan.gov]  
**Sent:** 4/29/2019 6:20:30 PM  
**To:** Pelloso, Elizabeth [Pelloso.Elizabeth@epa.gov]  
**Subject:** FW: Grand River Revitalization - Hydraulic Modeling Meeting Follow-up

FYI.

**Lucas A. Trumble, P.E.**  
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**From:** Trumble, Luke (DEQ)  
**Sent:** Friday, December 28, 2018 11:08 AM  
**To:** Staal, Michael <mstaal@grand-rapids.mi.us>; Saldivia, Luis (DEQ) <SALDIVIAL@michigan.gov>; Occhipinti, Matthew (DEQ) <OCCHIPINTIM@michigan.gov>; Patin, Jacob (DEQ) <PatinJ1@michigan.gov>  
**Cc:** Steffen, Jay <jsteffen@grand-rapids.mi.us>; Richard Bishop <richard@grandrapidswhitewater.org>; Matt Chapman <matt@grandrapidswhitewater.org>; Smalligan, James <jesmalligan@ftch.com>; Soltys, Peter W. <pwsoltys@ftch.com>; Jason Carey <jason.carey@riverrestoration.org>; Quinn Donnelly <quinn.donnelly@riverrestoration.org>; Scott Prins <scott.prins@riverrestoration.org>; Michael Scurlock <michael.scurlock@riverrestoration.org>  
**Subject:** RE: Grand River Revitalization - Hydraulic Modeling Meeting Follow-up

Hi Michael,

Thanks for forwarding. We will review and get back to you as schedules allow.

FYI, I did skim through the 11/27 call notes and saw one note that is misleading. Page 4 of the meeting notes states:

*Luke Trumble of MDEQ stated that a Manning's N increase of 0.02 for boulders over existing conditions has been used in past permitted projects.*

It was never stated during our conversation that a difference of 0.02 above existing conditions for boulder fill had been permitted in past projects. There was some discussion about what Manning's n values are appropriate for different material sizes. The comment about a 0.02 minimum difference in n values came from our review of USGS/FWA research/literature which compared sand and gravel bed systems to boulder bed systems at very deep flow depths. To be clear, it was never stated that a blanket 0.02 difference in Manning's n values for existing bed material to proposed should be applied to this project. As stated previously, the n values used in the proposed conditions model should be representative of the increased bed roughness and in line with accepted research/literature.

We will provide additional comments as folks return from holiday vacations and have had a chance to review the documents provided. Please let us know if there are any questions or concerns.

Thanks,  
Luke

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**From:** Staal, Michael <[mstaal@grand-rapids.mi.us](mailto:mstaal@grand-rapids.mi.us)>

**Sent:** Wednesday, December 19, 2018 12:51 PM

**To:** Saldivia, Luis (DEQ) <[SALDIVIAL@michigan.gov](mailto:SALDIVIAL@michigan.gov)>; Occhipinti, Matthew (DEQ) <[OCCHIPINTIM@michigan.gov](mailto:OCCHIPINTIM@michigan.gov)>;

Trumble, Luke (DEQ) <[TrumbleL@michigan.gov](mailto:TrumbleL@michigan.gov)>; Patin, Jacob (DEQ) <[PatinJ1@michigan.gov](mailto:PatinJ1@michigan.gov)>

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**Subject:** Grand River Revitalization - Hydraulic Modeling Meeting Follow-up

**Importance:** High

Good afternoon Luis,

I hope this e-mail finds you well as we enter this holiday season. Attached to this e-mail is the follow-up we promised from our hydraulic modeling conference call on November 27, including the 11/27 meeting notes, a memo from River Restoration Org on the changes made to the Manning's N coefficients, and a letter from FTCH who reviewed the modeling.

Would you and your team please look over the attached documents? I believe the changes we made are consistent with our discussion on 11/27, and I would like to make sure that our changes with the Manning's Coefficients are in agreement with your understanding of that discussion too. Your feedback on these documents would be greatly appreciated. Once we know our changes are in agreement with what we talked about, we will ensure the other modelling reports get updated as well, including the Modelling QA/QC Memo that Luke has seen and may have distributed.

Please let me know if you have any questions or concerns. Our team is available to discuss any outstanding items that may not have been addressed.

Thanks again for your time at our meeting and taking the time to make sure our understandings are in agreement. I hope everyone has a great holiday season.

Best,

Mike

**Michael Staal, P.E.**

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